AMENDMENTS TO THE CLAIMS

Please amend Claims 7, 24, 41, and 47 as indicated below.

1. **(Previously Presented)** A method of using a medium having a surface relief pattern on a surface thereof to manufacture a diffractive optical element, said method comprising:

physically contacting a layer of curable material with said surface relief pattern on said surface of said medium to thereby imprint said pattern on a surface of the layer; and

curing said curable material, said curing comprising forming diffractive features comprising refractive index variations in said layer that correspond to said pattern, said forming comprising propagating energy through said medium and from said medium into said layer and producing said diffractive features through non-interference effects.

2. **(Original)** The method of Claim 1, wherein said energy comprises electromagnetic energy.

3. **(Original)** The method of Claim 2, wherein said electromagnetic energy comprises ultraviolet (UV) light.

4. **(Original)** The method of Claim 1, wherein said medium is substantially optically transmissive.

5. **(Original)** The method of Claim 4, wherein said medium is substantially optically transmissive to ultraviolet (UV) radiation.

6. **(Original)** The method of Claim 4, wherein said medium has an index of refraction that is substantially the same as the index of refraction of the curable material.

7. **(Currently Amended)** The method of Claim 1, wherein said energy is in the form of ~~heat or~~ an electron beam.

8. **(Original)** The method of Claim 1, further comprising removing said medium from said curable material.

9. **(Original)** The method of Claim 1, wherein said medium is selected from the group consisting of tape and a drum.

10. **(Original)** The method of Claim 1, wherein said medium comprises a surface relief hologram.

11. **(Original)** The method of Claim 1, wherein said curable material comprises a polymer selected from the group consisting of urethane, acrylate, and epoxy.

12. (**Original**) The method of Claim 1, wherein said contacting creates an interface between said medium and said layer, said interface having a pattern corresponding to said surface relief pattern, said method further comprising using said interface pattern to mechanically influence the orientation of microstructures in said layer.

13. (**Original**) The method of Claim 12, wherein said microstructures comprise optical liquid.

14. (**Original**) The method of Claim 13, wherein said optical liquid comprises liquid crystal.

15. (**Original**) The method of Claim 14, wherein said liquid crystal comprises nematic liquid crystal.

16. (**Original**) The method of Claim 15, wherein said nematic liquid crystal comprises materials selected from the group consisting of E7 materials, BL material, and TL compounds.

17. (**Original**) The method of Claim 15, wherein said nematic liquid crystal comprises materials selected from the group consisting of mixtures of cyanobiphenyls and higher aromatic homologues, and mixtures of chloro and fluoro substituted mesogens.

18. (**Original**) The method of Claim 12, wherein said layer has a surface opposite said interface, the method further comprising propagating energy through said interface pattern towards said opposite surface.

19. (**Original**) The method of Claim 1, additionally comprising further curing said curable material.

20. (**Original**) The method of Claim 19, wherein said further curing comprises exposing said curable material to additional energy.

21. (**Original**) The method of Claim 20, wherein said energy comprises electromagnetic energy.

22. (**Original**) The method of Claim 21, wherein said electromagnetic energy comprises UV light.

23. (**Original**) The method of Claim 21, wherein said energy comprises heat.

24. (**Currently Amended**) The method of Claim ~~1~~ 2, wherein said ~~curing includes corona treatment~~ electromagnetic energy comprises light.

25. (**Original**) The method of Claim 1, wherein said curable material comprises liquid crystal and said method further comprises surrounding said curable material with a pair of

electrodes for applying an electrical field across said liquid crystal to alter optical characteristics of said curable material.

26. (**Original**) The method of Claim 25, further comprises providing electrically conductive substantially optically transmissive material to form said electrodes.

27. (**Original**) The method of Claim 25, further comprises laminating electrically conductive substantially optically transmissive material to form said electrodes.

28. (**Original**) The method of Claim 26, comprising depositing indium tin oxide (ITO) to form at least one of said electrodes.

29. (**Original**) The method of Claim 25, further comprising:

removing said medium having a surface relief pattern from said layer of curable material; and

forming an index matching layer against said imprinted pattern on said layer of curable material, said index matching layer comprising material that has an index of refraction substantially identical to that of said curable material.

30. (**Original**) The method of Claim 29, wherein said index matching layer is electrically conductive.

31. (**Original**) The method of Claim 1, wherein said diffractive optical element comprises a diffuser.

32. (**Original**) The method of Claim 1, wherein said diffractive optical element comprises a diffraction grating.

33. (**Previously Presented**) A method of using first and second media having first and second surface relief patterns on respective surfaces thereof to manufacture a diffractive optical element, said method comprising:

physically contacting a layer of curable material with said first surface relief pattern on said surface of said first medium to thereby imprint said first pattern on a surface of the layer; and

curing said curable material, said curing comprising forming diffractive features comprising refractive index variations in said layer that correspond to said first pattern on said first medium, said forming comprising propagating energy through said first medium and from said first medium into said layer and producing said diffractive features through non-interference effects.

physically contacting said layer of curable material with said surface relief features on said surface of said second medium to thereby imprint said second pattern on another surface of the layer such that two surface relief patterns on opposite sides of said layer surround said index of refraction variations.

34. (**Previously Presented**) A non-holographic method of using a medium having a surface relief pattern on a surface thereof to manufacture a volume hologram, said non-holographic method comprising:

physically contacting a layer of curable material with said surface relief pattern on said surface of said medium to thereby imprint said pattern on a surface of said layer; and

non-holographically forming diffractive features in said layer by propagating energy through said medium and from said medium into said layer such that refractive index variations corresponding to said pattern are created in said layer.

35. (**Original**) The method of Claim 34, wherein said curable material comprises liquid crystal.

36. (**Original**) The method of Claim 35, further comprising providing electrodes on opposite sides of said curable material for applying an electric field across said layer of curable material to alter one or more optical characteristics thereof.

37. (**Original**) The method of Claim 36, further comprising forming a pair of layers of electrically conductive substantially optically transmissive material as said electrodes.

38. (**Original**) The method of Claim 37, comprising providing indium tin oxide (ITO) to form said electrodes.

39. (**Original**) The method of Claim 38, further comprising:

removing said medium having a surface relief pattern from said layer of curable material; and

forming an index matching layer against said imprinted pattern on said layer of curable material, said index matching layer comprising material that has an index of refraction substantially identical to that of said curable material.

40. (**Original**) The method of Claim 39, wherein said index matching layer is electrically conductive.

41. (**Currently Amended**) A method of using surface relief features on a surface of a medium to manufacture a volume hologram comprising:

physically contacting said surface relief features on said surface of said medium with a surface of a layer of curable material; and

forming a pattern of diffractive features comprising refractive index variations in said layer by propagating electromagnetic energy through the surface relief features of the medium and from the medium into said layer, the formation of said pattern of diffractive features being dependent on said surface relief features, and substantially independent of any diffraction of said energy by said surface relief features during propagation through said medium.

42. (**Original**) The method of Claim 41, wherein said diffractive features comprise index of refraction variations.

43. (**Original**) The method of Claim 41, wherein said curable material comprises a polymer selected from the group consisting of urethane, acrylate, and epoxy.

44. (**Original**) The method of Claim 41, wherein said electromagnetic energy comprises ultraviolet light.

45. (**Original**) The method of Claim 41, wherein said physically contacting surface relief features comprises forming indentations in said layer of curable material.

46. (**Original**) The method of Claim 41, wherein said medium comprise a surface relief hologram.

47. (**Currently Amended**) A method of utilizing a medium having a surface relief pattern on a surface thereof to manufacture an optical element having a multiplicity of diffractive features comprising:

physically contacting said surface relief pattern with a layer of curable material such that said pattern and said layer are in contact over a contact area of said layer; and

forming said diffractive features comprising refractive index variations in said layer by illuminating said contact area with light having an intensity distribution substantially free of interference fringes.

48. (**Original**) The method of Claim 47, wherein said optical element is selected from the group consisting of a hologram, a diffraction grating, and a diffuser.

49. (**Original**) The method of Claim 47, wherein said illuminating comprises directing substantially incoherent light on said contact area.

50. (**Original**) The method of Claim 49, wherein said incoherent light has a coherence length of less than or equal to about several wavelengths.

51. (**Original**) The method of Claim 49, wherein said contact area is illuminated with white light.

52. (**Original**) The method of Claim 49, wherein said contact area is illuminated with sunlight.

53. (**Original**) The method of Claim 49, wherein said illuminating comprises directing light from a light source selected from the group consisting of an arc lamp, an incandescent lamp, and a fluorescent lamp onto said contact area.

54. (**Original**) The method of Claim 47, wherein said curable material comprises liquid crystal.

55. (**Original**) The method of Claim 54, further comprising providing electrodes on opposite sides of said curable material for applying an electric field across said layer of curable material to alter one or more optical characteristics thereof.

56. (**Original**) The method of Claim 55, further comprising forming a pair of layers of electrically conductive substantially optically transmissive material as said electrodes.

57. (**Original**) The method of Claim 56, comprising providing indium tin oxide (ITO) to form said electrodes.

58. (**Original**) The method of Claim 55, further comprising:

removing said medium having a surface relief pattern from said layer of curable material; and

forming an index matching layer against said imprinted pattern on said layer of curable material, said index matching layer comprising material that has an index of refraction substantially identical to that of said curable material.

59. (**Original**) The method of Claim 58, wherein said index matching layer is electrically conductive.

Claims 60-98 (**Canceled**)

99. **(Previously Presented)** A method of manufacturing a diffractive optical element using a first medium having a first surface relief pattern on a surface thereof and a second medium having a second surface relief pattern on a surface thereof, said method comprising:

physically contacting one side of a layer of curable material with said first surface relief pattern on said surface of said medium to thereby imprint said pattern on said side of the layer;

physically contacting another side of a layer of curable material with said second surface relief pattern on said surface of said medium to thereby imprint said pattern on said another side of the layer; and

curing said curable material, said curing comprising forming diffractive features comprising refractive index variations in said layer that correspond to said pattern, said forming comprising propagating energy through said first medium and from said first medium into said layer and producing said diffractive features through non-interference effects.

Claims 100-108 **(Canceled)**

109. **(Previously Presented)** The method of Claim 99, wherein said curable material comprises liquid crystal and said method further comprises surrounding said curable material with a pair of electrodes for applying an electrical field across said liquid crystal to alter optical characteristics of said curable material.

110. **(Previously Presented)** The method of Claim 100, further comprising providing electrically conductive substantially optically transmissive material to form said electrodes.

111. **(Previously Presented)** The method of Claim 101, comprising providing indium tin oxide (ITO) to form said electrodes.